

REMARKS

Claims 1-26 are pending.

I. Claims 13-16

Although Group I, corresponding to claims 1-12 and 17-26, was elected with traverse by Applicants in the Response to Restriction Requirement of March 19, 2003, claims 13-16 have not been cancelled. Although this Office Action fails to comment on the arguments presented in the Response to Restriction Requirement to traverse the Restriction Requirement, Applicants assume the Restriction Requirement has been made final, and claims 13-16 have been withdrawn from consideration.

II. Specification Objection

The specification stands objected to under 37 CFR § 1.71 as failing to clearly describe the subject matter of the invention, as well as failing to enable the claimed invention. Specifically, the Office Action asserts that the specification fails to define “entry angle”. The Office Action states because more than one definition exists for the term “entry angle”, the specification and/or claims must clarify the intended definition of “entry angle”.

Applicants respectfully submit it is clear from in the present application, e.g., claim 1, that the entry angle of a zone is the angle with respect to the direction of movement of the product.

Moreover, one of ordinary skill in the art would readily understand the present application defines entry angle using the orientation of EP 0298560 (EP ‘560) specifically disclosed by the present application rather than some definition allegedly in a reference not mentioned by the present specification.

Additionally, EP ‘560 and the present application are in the name of a common assignee. Thus, Applicants additionally present that one of ordinary skill in the art would certainly be directed to look to EP ‘560 if any ambiguity existed. (Although the listed applicant of EP ‘560 is “Hoogovens Groep B.V.”, Hoogovens and British Steel merged to form the present assignee, Corus Staal B.V.)

In any event, Applicant traverses the Office Action statement that a different definition of “entry angle” is given in McHenry et al. (U.S. Patent No. 6,098,829). McHenry et al. does not refer to an “entry angle”. In column 10, lines 19-24, this reference describes how the inventors found that the angle at which the generatrix of the entry cone makes with the horizontal plate perpendicular to the axis of the punch is critical for drawing metal-plastic-metal constructions. This is the angle illustrated in Figure 6 of McHenry et al. The angle defined in McHenry et al. is not referred to as an “entry angle” and has a definition different to that given in the present application. Thus, one of ordinary skill in the art would have no reason for confusing the angle described in McHenry et al. with an “entry angle”. Reconsideration of this objection is respectfully requested.

II. Drawing Objections

The drawings stand objected to under 37 CFR § 1.83(a) as not showing each feature recited by the present claims. In response, new Figs. 2-4 have been added, and the specification has been amended to reflect these changes. Consistent with adding Figs. 2-4, the originally filed sole figure has been labelled Fig. 1. Moreover, it is noted the rejection should not apply against process claims.

Figs. 2-4 are merely schematic representations of embodiments described in the specification and claims, as filed. Thus, Figs. 2-4 present no new matter. The amendments to the specification show Figs. 2-4 present no new matter as the text is essentially merely labelled to include the references numerals directly corresponding to the elements of the figures.

Specifically, new Fig. 2 is a schematic representation of the forming surface of a wall-ironing ring based on the disclosure at, e.g., page 4, lines 22-28. Number 1 denotes the product. The arrow shows the direction of movement of the product and α_1 , α_2 , and α_3 denote entry angles. From, e.g., page 4 lines 24-25 the term entry angle is clearly defined as the angle of the forming surface with respect to the direction of movement of the product. Number 2 denotes the starting zone of the forming surface. The starting zone, as described in page 4, lines 26-28 and page 3, lines 1-6, has a smaller entry angle than in

the subsequent or main zone denoted by number 3. In accordance with this description α_1 is smaller than α_2 in the figure.

Number 4 denotes the land zone, as described on page 2, lines 18-20, which follows the zone with the largest entry angle. As described in page 2, line 19 the land zone has an entry angle of 0° . Number 5 denotes the end zone, which is described in page 2, lines 16-17 and has a smaller entry angle than in the "subsequent" zone 3 (subsequent is relative to the starting zone). As described in page 2, lines 21-22, the entry angle has a fixed value in each of the zones. Number 14 denotes the transverse dimension of the forming surface (transverse with respect to its longitudinal direction).

New Fig. 3 is a schematic representation of the forming surface of a wall-ironing tool which has a starting zone 6, a subsequent or main zone 7, a land zone 8 and an end zone 9 where the entry angles change smoothly over the length of the forming surface as described in page 4, lines 22-28, page 2, lines 16-20 and page 2, lines 21-25.

New Fig. 4 is a schematic representation of a cross section through a wall ironing tool comprising two wall-ironing rings 10, 11 of the type described above, in accordance with page 2, lines 29-31. The arrow shows the direction of movement of the product through the tool. Numbers 12, 13 denote a strip or wire wound around the wall-ironing ring under stress as described in page 4, lines 32-35 and radially prestresses the wall-ironing ring.

III. 35 USC § 112

A. First Paragraph

Claims 1-12 and 17-26 stand rejected under 35 USC § 112, first paragraph, as failing to comply with the enablement requirement. However, in light of the facts presented in Section I above, reconsideration is requested.

B. Second Paragraph

Claims 1-6, 9-12, 18-20, 22, 24 and 25 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim that which is considered the invention. In response, the claims have been amended

to remove any lack of antecedent basis, as identified in Paragraphs 9-24 of the Office Action. In the claims, the term “plurality” means two or more.

IV. 35 USC § 102

Claims 1-12 and 17-26 stand rejected under 35 USC § 102(b), as being anticipated by McHenry et al. The Office Action asserts this reference discloses each feature recited by the present claims.

McHenry et al. discloses a process for drawing layered metal-plastic-metal compositions (see, e.g., col. 6, lines 34-39). McHenry et al. does not disclose a process or an apparatus for wall ironing. Figure 1 represents the drawing of a circular disc for forming a cup. Element 2 in the figure is a drawing die plate (col. 9, line 45). Column 9, lines 46-48 describe how the cup is formed without a reduction in thickness. Figure 6 represents mold components for a second drawing pass. Element 28 in the figure is a die plate (col. 10, line 14). Column 10, lines 9-18 describes the apparatus illustrated in Figure 6 and specifically mentions there is no significant reduction in the thickness during the second drawing pass, i.e., there is no ironing. Figure 2 represents the drawing of a circular disc for forming an end. Element 32 in the figure is a drawing mold die (col. 9, line 31). There is no mention of the end being ironed. Thus, Applicants respectfully present that McHenry et al. does not disclose a wall ironing tool.

Additionally, Applicants respectfully submit this reference does not teach or disclose each feature recited by the present claims. For example, present claim 1 recites a process for wall-ironing, but the reference does not disclose a process for the wall ironing of a product in sheet form. With respect to claim 17, Applicants respectfully present McHenry et al. does not disclose a wall ironing tool.


In addition none of the drawing tools 2, 32 or 28 in Figures 1, 2, and 6 of McHenry et al. have a forming surface with an entry angle smaller in a starting zone than in a subsequent zone, as recited by claims 1 and 17. As can be seen from Figures 1, 2 and 6 of McHenry et al., the entry angles of the elements 2, 32 and 28 are larger in a starting zone of the forming surface than in the subsequent zone thereof.

The present invention relates to the forming of a metal sheet coated on at least one side with a layer of plastic. As discussed on page 1, lines 11-28 the present invention provides a solution to the problem of the plastic layer breaking and being stripped off during wall ironing. The process of the present invention enables larger entry angles to be used, which in turn means the wall ironing tool achieves a longer service life. McHenry et al., however, relates specifically to drawing metal-polymer-metal compositions. There is no hint of the problem of stripping of a plastic layer during wall-ironing of a metal polymer product or a polymer-metal-polymer product, nor is there any hint of how the problem could be reduced. There is thus no teaching towards the solution of the present invention, namely that the entry angle varies over the length of the forming surface with the entry angle being smaller in a starting zone of the forming surface than in the subsequent zone thereof. Applicants respectfully present the McHenry et al. fails to expressly anticipate the present claims.

V. Conclusion

In view of the above, it is respectfully submitted that all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,

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